Australian Industry Report

Composites in Aerospace

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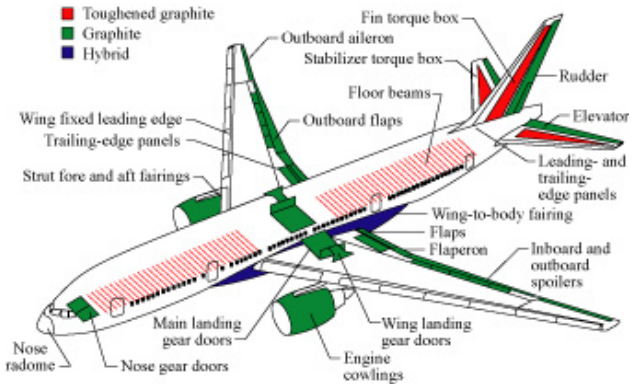

SUMMARY

- The production and use of composite materials is not new in Australia. Composite materials have been used for some time in, for example, aerospace structures, boats, vehicle components, utility poles, radomes, and orthopaedics.

- The use of *advanced* composites is attracting attention, with an estimated one-fifth, (about 40), of the industry association's (Composites Australia Inc.) member companies processing, or having the capabilities to process, advanced composite materials. Many of the 40 are small companies supplying niche markets or larger companies that are project-driven, supplying advanced composites on demand.

- Australia imports on average around $60 million worth of composite raw materials annually from the U.S. for use in aerospace (HS 3506, 68151). Of this figure, Hawker de Havilland uses between 90-95% for work on wing and tail structures for Boeing aircraft.

- The use of composite materials is growing at about 5% per annum, according to an industry source. This may increase as the results of current research materialize into new applications, such as civil enginering works, bridges, and increased use in automotive and marine.

- Applications in aerospace, recreation and high-tech marine form the basis of the advanced composites industry, with the possibility of some developments in infrastructure leading to the growth of a new subsector. Australia's most recent class of naval minehunter, the Huon Class, is built from composite materials.

- There are a number of academic establishments engaged in composites research. These include a number of universities, and the Cooperative Research Center for Advanced Compsite Structures (CRC-ACS).

MARKET OVERVIEW

The aerospace industry in Australia requires, and drives, high standards that extend from major contractors to subcontractors and second-tier suppliers. This has fostered the development of a group of manufacturers with an understanding of advanced composite materials and processing. Consequently, this industry is a well-established user of composites at the high end of development. The largest in the industry, Hawker de Havilland (HdeH), based in Melbourne, was supplying large aircraft parts, such as tail sections, even before ownership was taken over by Boeing in late 2000. HdeH has a core capability in advanced composites, which includes research and development, design, test, fabrication, repair and assembly of components. The company has comprehensive capabilities for composite and metal bonding, and an autoclave large enough to accommodate a Boeing 747 rudder. It is hard to imagine that composite processing technology in Australia would have developed to its present scale without the presence of this company. HdeH is the largest importer of raw materials for composite work, and its output includes precision work for major aircraft manufacturers. Also, the company is an innovative designer and producer of aero structures, and manufacturers and designs aircraft structures and systems. It makes parts for most Boeing airliner types including the 737, 747, 757 and 777, as well as military aircraft such as the F/A-18 and the Super Hornet.

The main industry association for composites is Composites Australia Inc., formerly the Composite Institute of Australia (see contacts). It is the industry association representing the various organizations involved in this industry in Australia, and includes fabricators, raw material and equipment suppliers, consultants, R&D bodies, and educational institutions. Current membership is about 200 corporate members. It holds workshops and an annual conference. Composites Australia is closely allied with the CRC-ACS.

The primary goal of the CRC-ACS is to provide a focus for the development of advanced technologies that will foster the growth of an efficient and competitive Australian composite industry. The organization focuses on aerospace, maritime and general composites research. It has produced a number of technological developments, resulting in reduced costs in existing manufacturing programs as well as making major contributions to new product contracts. The CRC-ACS annual budget of around $7 million is funded by a group of participating organizations, including base funding from the Australian Federal Government until mid-2010. The Australian CRC program was established in 1990 to improve the effectiveness of Australia's research and development effort. It links researchers with industry to focus R&D efforts on progress towards utilisation and commercialisation.

CRC-ACS supporters are:

- Hawker de Havilland (Boeing)
- General Motors Holden
- Defense Science & Technology Organization (Aeronautical & Maritime Research Laboratory)
- Pacific ESI
- Monash University
- Royal Melbourne Institute of Technology
- University of New South Wales
- University of Sydney
- University of Newcastle.

Contact details for the CRC-ACS can be found in the contacts section.

MARKET TRENDS

The local market for composites is growing, as advances are made in processing techniques. The main concern of the industry at present is to achieve reductions in cost of materials and processing, so that composites can be used in products and applications that currently are not cost-effective. Another major objective of the researchers is to improve the impact resistance performance of the composites.

Supplies of resin and carbon-based fabric, major components used in composite production, are expensive to source and import. Any moves to reduce the cost of these, and other specialized raw materials will be welcomed by the local industry. In each of the five years to 2005, Australia imported from the U.S. an average $60 million worth of raw materials for composite production, mostly under HS codes 3907, 3506 and 681510.

Raw materials for composites (fabrics & resins - all industry categories)

	2003	2004	2005 (est)
Total Market Size	208	195	215
Total Local Production	0	0	0
Total Exports *	0	0	0
Total Imports	208	195	215
Imports from the U.S.	55	62	70
Exchange rate	0.66	0.74	0.75

Exports are transformed material comprising value added – i.e. airframe components for Boeing, Airbus.

Sources: World Trade Atlas, Export Statistics Express. Detailed statistics are difficult to identify. Resin manufacturers, for example, are reluctant to provide sales figures, according to Composites Australia.

Raw materials for aerospace production are sourced currently from the EU and the U.S. In the U.S., Hexcel Corporation and Toray Composites America supply the majority of the resin and fiber for Australian use, some of which is pre-impregnated, and some carbon fiber and resin separately for later resin injection.

Another issue facing the users of materials used in the processing of composites is that of qualification. Local companies are facing increasing sales pressure from South East Asian suppliers, including China. This recent push into the Australian market is evidenced by frequent visiting delegations and mail campaigns. At this time, U.S. suppliers of raw materials for composite work have an edge over this competition stemming from the qualification process employed in the domestic industry, and U.S. high standards of quality, critical for aerospace work.

U.S. suppliers are also out in front in the provision of services, such as software for product design. Currently, this software is regarded as “extremely expensive”, and there is a demand for cheaper packages. Leading companies in advanced composite work, for example Buchanan

Advanced Composites, are looking for opportunities to reduce the cost of production by using overseas-developed technology on a licensed basis.

END USERS

There is a widening base of end users of composite materials in Australia, if we include all applications. The uses range from small dental work to uses as large as bridge construction. The demand for the latter is due to the large number of aging timber bridges needing replacement within a short timeframe, where construction with composites offers advantages over traditional materials

Apart from some repair and maintenance work carried out in Australia, the end users for aerospace composite structures are outside Australia. HdeH is at full capacity keeping up with demand. As may be expected, with HdeH being based in Victoria, this is the state where the majority of aerospace composites work is taking place.

Some of those involved

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Aerostructures
Agent Orientated Software Pty Ltd
Ansett Aviation Engineering Services
Australian Aerospace
BAE Systems
Boeing Australia Limited
Cablex
Codarra Advanced Systems
Daronmont Technologies Pty Ltd
GKN Engineering
Hawker de Havilland
Hawker Pacific
Helitech Pty Ltd/Sikorsky
Honeywell Aerospace Australia
Qantas Defence Services
Raytheon Australia Pty Ltd
Rosebank Engineering Pty Ltd
Structural Monitoring Systems
Tenix Defence Pty Ltd
Vipac Engineers & Scientists

MARKET ACCESS

Australia and the United States enacted a Free Trade Agreement (FTA) on January 1, 2005, eliminating duties on more than 99 percent of tariff lines, including plastic products and organic chemicals. Prior to the FTA, the maximum general tariff on such goods was five percent.

Both imported and locally manufactured products are subject to a Goods and Services Tax (GST). The GST is a broad-based tax of ten percent on the supply of most goods and services consumed in Australia. It is akin to the value-added tax systems in Canada and Europe.

According to our contact with local industry, potential U.S. suppliers don't need permission or an invitation to visit Australia and make contact with the potential business partners. To enter the market as a composite processor, the entrant will face high startup costs, such as qualification, capital setup, certification, autoclaves, trimming processes, painting and finishing processes, for example.

MARKET ENTRY

Top-grade fabrics and resins are traditionally sourced from the U.S., from long-term suppliers. According to our contacts in industry and the CRC-ACS, the cost of material certification has been a long-term barrier to entry for raw material suppliers – for example of fabrics and resins. Each new material requires certification before it can be used, and the cost of this process inhibits all but the larger suppliers from obtaining certification from one of the testing authorities in the U.S. Consequently, according to local

sources, there is a small number of long-term suppliers whose position remains dominant. The local cost of labor, which is still a large element of composite processing, is also high. Supply chains are well established.

Success in the Australian market requires establishing a local sales presence. For American manufacturers this means appointing an agent or distributor. The territory covered by an appointment is usually negotiable – it may include only certain states of Australia, the entire country, or New Zealand as well. An increasing number of businesses and investors see Australia as a secure platform from which to serve third markets in Asia.

Most of the criteria American firms use to select agents or distributors can be transferred to Australia, with expectations adjusted to the scale of the market. Performing due diligence is just as important as in the United States, and numerous resources are available to assist in that work.

The standard forms of trade finance are all prevalent and widely used in Australia. In the private sector, bank and institutional financing is available. Historically, however, the banking sector has not been a major source of capital for small startup companies investing in the development of new technology.

The method, timing and arrangements for payment are a matter for negotiation between the U.S. exporter and Australian customer. The agreement reached will depend on the relative bargaining strengths of the two parties, the creditworthiness of the buyers and the financial resources of the seller. Generally, however, payment terms of between 30-60 days are considered the norm for small-to-medium consignments and up to 90 days for large volume purchases. The method of payment is usually by letter of credit or sight draft.

There are distributors to the composite industry, which, while not numerous, are likely to increase as the use of composites diversifies into new areas. In the medium term, opportunities may emerge in the production of airframes for unmanned aircraft. There may also be possible opportunities in composite repair work, and lifecycle support for composite structures

SERVICES OFFERED BY THE U.S. COMMERCIAL SERVICE

The U.S. Commercial Service can assist American companies in the Australian market with the following services:

- Customized Market Research (CMR) - recommended as the entry-level step to determine prospects for a company's products or services, and as a tool to identify market opportunities and representation interest. Based on the finding of a CMR, a proposed customized market strategy is then prepared which could include either our International Partner Search or Gold Key Matching service.

- International Partner Search (IPS) - involves a search to identify up to five qualified Australian agents, distributors, or joint venture partners who have examined a U.S. company's materials and have expressed an interest in the company's products or services.

- Gold Key Matching Service (GKS) - schedules meetings with local companies for visiting U.S. firms.

- International Company Profile (ICP) – assists U.S. companies evaluate potential business partners by providing a detailed report on Australian companies. Through the service, clients can request

answers to detailed questions about Australian companies on a variety of issues and receive advice about the relative strength of the firm in its market and its reliability, among other things.

For more information on any of these services please contact your nearest U.S. Department of Commerce Export Assistance Center or visit our website at www.BuyUSA.gov/Australia

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Conference and Trade Display

On 2-3 March 2006, Composites Australia and the Composites CRC will hold an Annual Conference & Exhibition, heralded as the international forum for the composites industry in Australia. The Conference & Exhibition will be held 2-3 March 2006 at the Manly Pacific Hotel in Sydney, Australia. Organizers are inviting participation for presentations, sponsorship, trade displays and demonstrations from all interested parties. There is a limit of 30 booths, and single 2 x 3 meter booth packages (not shell schemes) are available from $1,000. $1000 complete, not per meter. Double booth is $1650. Details can be found by clicking on the link below, or copying and pasting into your browser: http://www.compositesaustralia.com.au/pdfs/Exhibit2006Invite.pdf

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